

## Before We Start

- Q&A Box on the right
- PowerPoint available for download at the end
- Poll questions at the end are helpful! Thank you!
- Don't forget to take the post-test! (use the same link that you accessed the webinar with)
- Email Brittany with any questions or concerns ([bsnyder@utah.gov](mailto:bsnyder@utah.gov))

# Disclosures

- The Western Multi-State Division is accredited as a provider of continuing nursing education by the American Nurses Credentialing Center's Commission on Accreditation.
- Participants must complete the pre-test, attend the entire live event, and complete the post-test with a score of 80% or greater to earn one contact hour.
- No conflicts of interest are involved in this series. This includes no content relevant to commercial interest and no presence of commercial support.



# Objectives:

1. Identify various methods of contraception available to women with diabetes and the pros and cons of each method
2. Determine appropriateness and effectiveness of various contraceptive methods
3. Identify risks and benefits of contraceptive methods based on individual risk factors of women with diabetes
4. Identify important concepts of prenatal counseling in women with diabetes who are planning pregnancy

# Types of contraception available to women:

- ▶ Combined oral contraception pills (COCs)
- ▶ Progesterone only pills (POPs)
- ▶ Intrauterine devices (hormonal, nonhormonal)
- ▶ Intravaginal ring
- ▶ Patches
- ▶ Hormonal implants
- ▶ Hormonal injections
- ▶ Barrier methods
- ▶ Rhythm method



# Reliability of various methods in preventing pregnancy:

- ▶ Combined oral contraception pills (COCs): 1-9 in 100 (91 - 99%)
- ▶ Progesterone only pills (POPs): 13 in 100 (87%)
- ▶ Hormonal IUD/IUS: < 1 in 100 (99.4% or greater)
- ▶ Nonhormonal IUD: < 1 in 100 (99.4% or greater)
- ▶ Intravaginal ring: 1-9 in 100 (91-99%)
- ▶ Patches: 1-9 in 100 (91 - 99%)
- ▶ Hormonal implants: < 1 in 100 (99.4 %)
- ▶ Hormonal injections: 1-6 in 100 (94 - 99%)
- ▶ Barrier methods: 6 - 29 in 100 (71-94%)
- ▶ Rhythm method: 24 in 100 (76%)





# Combined oral contraceptive pills (COCs)

- ▶ Most COCs contain ethinyl estradiol (EE) as low as 20 mcg to as high as 50 mcg—it is rare that a pill with  $> 35$  mcg of EE are prescribed due to side effects and risk for clot
- ▶ Multiphasic vs monophasic: pills differ in their hormone content to more closely mimic natural hormone cycles
- ▶ Extended cycle pills packs: 91 days with withdrawal bleed every 3 months



# Pros and cons of COCs

## Pros

- ▶ Very affordable
- ▶ Safety profile is high
- ▶ Reduces dysmenorrhea & heaving menses
- ▶ Reduces risk for PID
- ▶ Treats acne
- ▶ Reduces premenstrual syndrome symptoms
- ▶ Reduces risk for anemia

## Cons

- ▶ Headaches, migraines increase
- ▶ Decreased libido
- ▶ Breast tenderness, bloating
- ▶ Risk for blood clots especially in smokers, women > 35 yr, DM, undiagnosed thrombophilic disorders, obesity, hyperlipidemia
- ▶ Must take pill daily and reliably
- ▶ If it contains DRSP, increased risk for hyperkalemia with some drugs and increased risk for blood clot



# Progesterone only pills (POPs)

- ▶ These contain various doses of progestins ranging from 0.3 mg to 1.5 mg depending on the progestin type
- ▶ These progestins include: Norethindrone, levonorgestrel, desogestrel, ethynodiol diacetate, or DRSP
- ▶ Drospirenone (DRSP) is a steroidal progestin of the spiro lactone group used in birth control pills at a 3 mg dose and it has mineralocorticoid properties; it spares potassium and puts women at risk for hyperkalemia if used concurrently with other medications which cause retention of potassium

# Pros and cons of POPs

## Pros

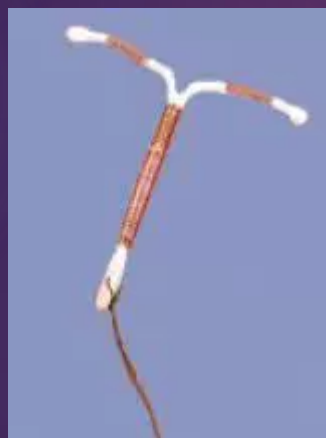
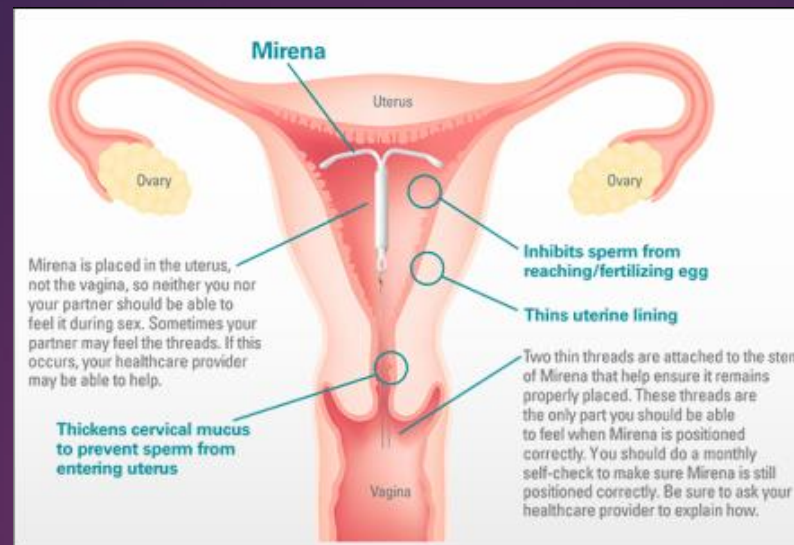
- ▶ May be used in situations where estrogen is contraindicated
- ▶ May lighten or stop menses
- ▶ Are taken every day without placebo pills
- ▶ Are less likely to cause headache and migraine than estrogen containing pills

## Cons

- ▶ May cause abnormal bleeding
- ▶ Missing pills increases risk for unintended pregnancy much more than COCs
- ▶ Efficacy declines sharply when used concurrently with AEDs
- ▶ May decrease libido and cause bloating
- ▶ Acne, depression, fatigue, ovarian cysts, weight gain

# Intrauterine devices: Progestin releasing and copper types

- ▶ There are 4 different brands of IUDs that are FDA approved for use in the United States: ParaGard, Liletta, Mirena, and Skyla
- ▶ These IUDs are divided into 2 types: copper IUDs (ParaGard) and hormonal IUDs (Liletta, Mirena, and Skyla)
- ▶ ParaGard uses copper wrapping around body of IUD and lasts for 12 years
- ▶ Mirena has progesterone releasing body and lasts for 6 years
- ▶ Liletta and Skyla also use progesterone releasing body and last for 3 years



# Pros and cons of IUDs

## Pros

- ▶ Highly reliable
- ▶ Long lasting contraception
- ▶ No significant systemic hormone release for either type
- ▶ Reduce bleeding (progestin type)
- ▶ Immediately reversible after removal
- ▶ Prevent PID
- ▶ Can be used while breastfeeding

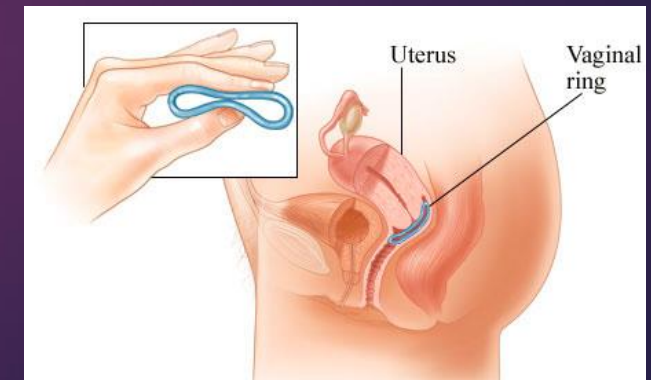
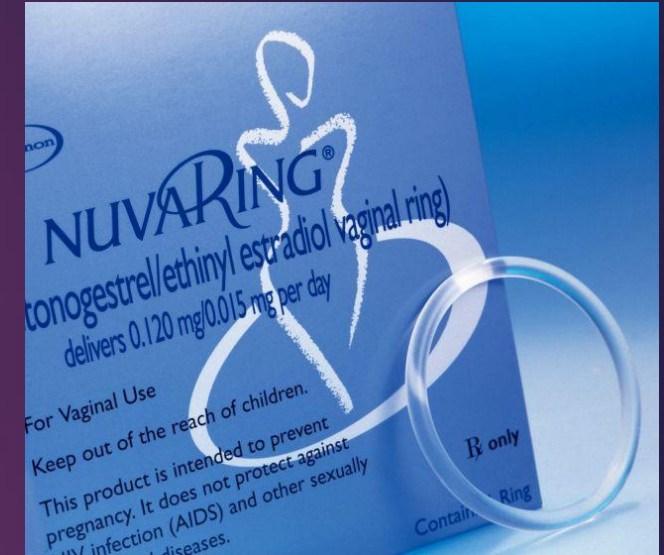
## Cons

- ▶ Cost can range from \$0 to \$1000
- ▶ Discomfort with insertion
- ▶ Abnormal bleeding with both types—somewhat worse with progestin type
- ▶ Heavier/worse periods with Paragard type
- ▶ Increased risk for tubal pregnancy
- ▶ Very small risk for injury to uterus (rare)
- ▶ Has been linked with idiopathic intracranial hypertension (pseudotumor cerebri )



# Vaginal ring contraceptive: NuvaRing

- ▶ Contains estrogen and progesterone that leech through the vaginal wall into the bloodstream
- ▶ Cost: \$0 - \$80/month
- ▶ Pros: lighter, shorter periods; replaced monthly
- ▶ Cons: same side effects, precautions and contraindications as those for COCs; vaginal irritation; accidental expulsion without knowing; forgetting to replace at monthly intervals; may take up to 2 months for periods to resume





# Implants: Implanon, Nexplanon

The birth control implant is very effective. Less than 1 out of 100 women a year will become pregnant using the implant. It lasts up to 4 years.

Certain medicines and supplements may make the birth control implant less effective. These include

- ▶ certain TB medicines
- ▶ certain medicines that are taken by mouth for yeast infections
- ▶ certain HIV medicines
- ▶ certain anti-seizure medicines
- ▶ certain mental disorder medicines
- ▶ herbals like St. John's wort



# Pros/Cons of Implants



## Pros

- ▶ Last for 4 years
- ▶ Periods may lighten or stop completely
- ▶ It can be used while breastfeeding
- ▶ Efficacy rates similar to sterilization but immediately reversible with removal
- ▶ Does not require remembering to take a daily pill
- ▶ Can be used by women in whom estrogen is contraindicated

## Cons

- ▶ Cost of insertion and removal (requires office procedure)
  - ▶ Insertion cost: \$0 - \$800
  - ▶ Removal cost: \$0 - \$300
- ▶ Nausea
- ▶ Sore breasts
- ▶ Weight gain
- ▶ Abnormal bleeding/spotting
- ▶ Complete cessation of periods which is undesirable for some patients
- ▶ Infection at implant site

# Birth control patches

- ▶ Applied to skin once weekly x 3 weeks or continuously if desired without week off
- ▶ Contain both estrogen and progesterone
- ▶ **Pros:** Less nausea/vomiting due to transdermal route, convenience of weekly application vs taking pill daily, effective
- ▶ **Cons:** Similar side effects to COCs, allergic reaction to adhesive, patches fall off increasing risk for unintended pregnancy, cost



# Injectable hormonal contraception

- ▶ Depot medroxyprogesterone acetate (DMPA) is the active hormone
- ▶ Progesterone dose = 150 mg IM injection
- ▶ Administered every 12 weeks and requires office visits episodically to maintain





# Pros and cons of DMPA injections:

## Pros

- ▶ Long-term convenience
- ▶ Very effective and reversible
- ▶ Can be used in women with contraindications to estrogen use
- ▶ Can stop periods entirely
- ▶ Can be used in women with PCOS to prevent endometrial hyperplasia
- ▶ Can be used with breastfeeding
- ▶ Is ideal for young women/teens due to high efficacy

## Cons

- ▶ Can cause abnormal bleeding/spotting
- ▶ Decreased libido
- ▶ Bloating, weight gain, acne, hair loss, depression, loss of libido, hirsutism
- ▶ Cost: \$0 - \$400 (with office exam and pregnancy test)
- ▶ May not resume periods until 3 months after discontinuation
- ▶ May result in reversible bone demineralization

# Barrier methods of birth control

- ▶ Condoms: 18 in 100 will become pregnant with perfect use; \$0 - ?
- ▶ Contraceptive sponge: 9 – 24 in 100 will become pregnant; \$15 for pack of 3 sponges for one time use each; uses spermicide impregnated in sponge
- ▶ Diaphragm: 6 -12 in 100 will become pregnant; \$0 - \$75 plus cost of office visit for fitting; also uses spermicide concurrently; replace every 2 years and after giving birth check fit
- ▶ Cervical cap: 14 – 29 in 100 will become pregnant (higher failure rate in those who have previously given birth vaginally); \$0 - \$75 + cost of office visit; uses spermicide concurrently; replace every 2 years

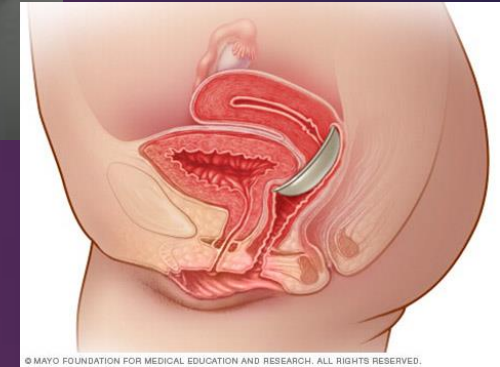




Cervical cap



Diaphragm

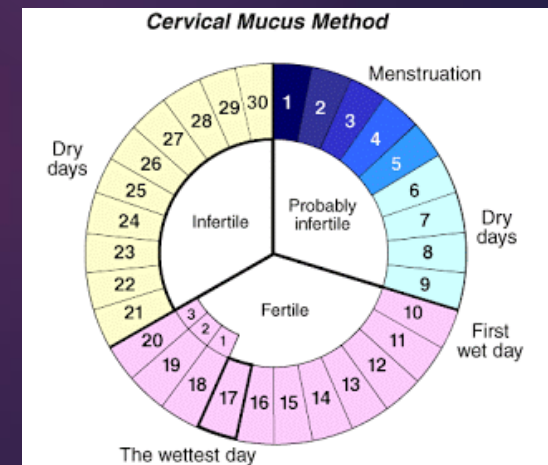
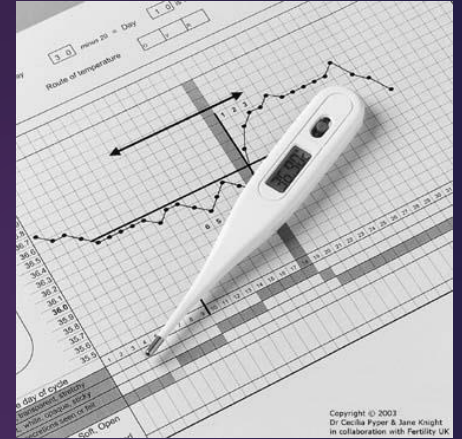


Contraceptive sponge



# Natural family planning: Fertility based awareness methods (FAM)

- ▶ Efficacy is poor: at least 24 in 100 will become pregnant even if using method consistently
- ▶ Various methods using cervical mucus as indicator, temperature method, lactational amenorrhea method (LAM), calendar method, standard days method, symptothermal method (combination of various methods above—is also the most accurate if used correctly of all FAMs)
- ▶ May be only option for some due to contraindications, religious beliefs, and/or cost of other methods



# Emergency contraception

- ▶ Paragard IUD is 99.9% effective when placed within 5 days (120 hours) of unprotected intercourse (1 in 1000 will become pregnant)
- ▶ Emergency contraceptive pills (ECPs)
  - a. Plan B One-Step, Next Choice One Dose, and My Way consist of one pill that the instructions state must be taken within 3 days (72 hours).
  - b. Levonorgestrel Tablets consists of two pills. Although the instructions state that the first one must be taken within 3 days (72 hours) and another must be taken 12 hours later, both pills can be taken at the same time within four days (96 hours) after unprotected sex.
  - c. Ella consists of one pill that must be taken within 5 days (120 hours).

# Factors to consider in women with diabetes when choosing a contraceptive method

- ▶ If glycemic control is poor, a reliable method to prevent pregnancy is advised before conception
- ▶ Age of diabetic patient is important in choosing method
- ▶ Comorbid health conditions: dyslipidemia, hypertension, migraine, obesity, PCOS, tobacco use
- ▶ Breastfeeding
- ▶ Menstrual problems/irregularities
- ▶ Time frame during which the women plans to conceive
- ▶ Use of medications that are teratogenic, effects are unknown, or the method increases risk relative to known risk factors
- ▶ Are further pregnancies planned? If not, tubal sterilization may be a good option
- ▶ Women's preferences



# Glycemic control

- ▶ Ill advised for women with poor glycemic control to become pregnant for multiple reasons:
  - ▶ Risk to mother: DKA (type 1), worsening hyperglycemia due to placental hormones; preeclampsia, increased risk for operative delivery, increased risk for post-delivery hemorrhage
  - ▶ Risk to infant: macrosomia, shoulder dystocia, unstable postnatal blood glucose levels requiring NICU admission
  - ▶ Birth defects: generally increased, multiple types including cardiac anomalies, orofacial clefts, and increased risk for NTDs
  - ▶ Pregnancy loss: increased rates of loss in those with DM; higher rates for uncontrolled hyperglycemia
  - ▶ Stillbirth: risk is high even when glycemic control is good; worse when it is uncontrolled
  - ▶ Risk related to comorbid health issues at the time: chronic kidney disease, uncontrolled hypertension, morbid obesity

# Individual risk factor considerations for BCM choice:

- ▶ Obesity and type 2 diabetes
  - ▶ Many with type 2 diabetes are obese or morbidly obese which increases risk for pregnancy complications
  - ▶ Obesity can cause IIH (pseudotumor cerebri): hormonal contraceptives may be less effective and may contribute to IIH as well, progestin containing IUDs have been linked with IIH
  - ▶ Would want to avoid BCM that is associated with weight gain
  - ▶ Many obese females have abnormal glucose metabolism: prediabetes if not frank DM
  - ▶ Weight loss is recommended before conceiving to reduce perinatal risk
  - ▶ Women having PCOS with diabetes—metformin may cause increased fertility, so effective birth control is paramount
  - ▶ May be on medications for comorbid health issues and diabetes that are not safe in pregnancy: SGLT2 inhibitors, GLP-1 RA, sulfonylureas, ACEIs, ARBs, weight loss medications



# Individual risk factor considerations for BCM choice:

- ▶ Obesity and type 2 diabetes (continued)
  - ▶ Some methods are less effective with higher BMI, increasing chance for pregnancy
  - ▶ Thromboembolic risk with estrogen containing methods increased in morbid obesity



# Hypertensive Diabetics

- ▶ Avoid estrogen-containing BCMs
- ▶ No evidence that progestins cause elevation of BP and are generally considered safe to use when oral contraceptives are desired
- ▶ EE-DRSP oral contraceptives may be useful in this group as the DRSP has anti-mineralocorticoid properties that have a neutral effect on neurohumoral activation and metabolic homeostasis of hypertensive women at reproductive age—no greater risk than with nonhormonal BCMs
  - ▶ Do not use with ACEIs and ARBs unless very closely monitoring K<sup>+</sup> levels



# Depression and diabetes

- ▶ Depression is common in diabetes
- ▶ Progestin only contraceptive methods are associated with higher rates of depression, particularly DMPA
- ▶ Combined oral contraceptives and NuvaRing can also cause depression
- ▶ It is best to avoid DMPA and progestin implants in those patients with comorbid depression



# Diabetics with polycystic ovarian syndrome (PCOS)

- ▶ Many women with PCOS have diabetes
- ▶ Combined oral contraceptives including those with DRSP, are effective in preventing facial hair growth and acne due to the excess of androgens that characterize PCOS
  - ▶ Combined oral contraceptives (COCs) reduce levels of androgen, especially testosterone, by inhibiting ovarian and adrenal androgen synthesis and by increasing levels of sex hormone-binding globulin (SHBG).
  - ▶ They are usually the first choice for the treatment of hirsutism, and between 60 and 100 percent of women with hirsutism will notice improvement when taking these medications.
- ▶ All COCs and POPs are good choices in women with PCOS to prevent endometrial hyperplasia
- ▶ Obesity, severe insulin resistance, and diabetes are prominent in PCOS, so BCMs that result in weight gain are discouraged

# Commonly used medications in diabetics that should be stopped when considering pregnancy

- ▶ GLP-1 RA
- ▶ SGLT2 inhibitors
- ▶ Sulfonylureas
- ▶ Angiotensin receptor blockers (ARBs)
- ▶ Angiotensin converting enzyme inhibitors (ACEIs)
- ▶ Weight loss medications (if attempting weight reduction before pregnancy): phentermine + topiramate, Qsymia, Belviq, Saxenda—should be on reliable birth control method if on these medications when considering conceiving





## Perinatal considerations...

- ▶ Before pregnancy attain glycemic control—HbA1c of 7% or lower
- ▶ If obese or previous history of GDM have a low threshold for assessing glycemic control early in pregnancy—no evidence that routine early OGTT testing is helpful in identifying those at risk and should not base GDM diagnosis on elevated A1c
- ▶ GDM glycemic goals to prevent fetal macrosomia: Fasting BG < 100 mg/dL (ideally 90-99 mg/dL) and 2 hour postprandial glucose < 120 mg/dL after meals
- ▶ Metformin, basal insulin (detemir or glargine) and prandial insulin dosing (lispro, aspart, and glulisine) are preferred for treating gestational diabetes and pregestational diabetes during pregnancy—no significant amounts of insulin glargine or detemir cross the placenta
- ▶ All GDM and pregestational diabetic patients should be followed by maternal fetal medicine perinatal specialist for optimal pregnancy outcomes



- ▶ Discuss which BCM the woman will use after delivery in the prenatal periods so that unintentional pregnancy does not occur
  - ▶ Closely spaced pregnancy carry increased risk for the diabetic mother—ideally space pregnancies at least 2 years apart
  - ▶ Barrier methods, IUDs, progestin-only preparations are all good choices and will not affect milk supply or quality
- ▶ Breast feeding, meeting stringent criteria can induce lactational amenorrhea, but ovulation may still occur even when menses have not resumed. It is recommended that a back-up method be used in addition to LAM, to fully ensure contraceptive efficacy
  - ▶ Cannot use NFP method effectively due to changes related to hormones produced while breastfeeding
- ▶ If a woman is diagnosed with GDM, a 2 hour, 75 gm GTT should be performed 6-8 weeks after delivery

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